JS LOOPS

Repeating Code

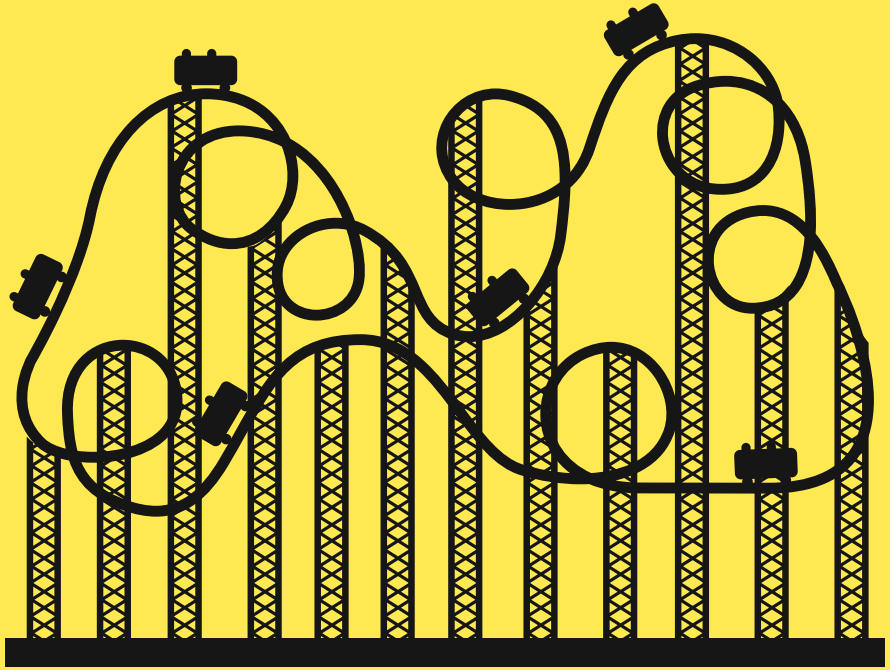
GOALS

- Write for loops
- Write while loops
- Avoid infinite loops!
- Iterate over arrays and objects

LOOPS

Doing things repeatedly

- Loops allow us to repeat code
  - "Print 'hello' 10 times
  - Sum all numbers in an array
- There are multiple types:
  - for loop
  - while loop
  - for...of loop
  - for...in loop



FOR LOOPS

FOR LOOPS

```
for (
    [initialExpression];
    [condition];
    [incrementExpression]
)
```

FOR LOOPS

```
          start at 1          stop at 10     add 1 each time
for (let i = 1; i <= 10; i++) {
    console.log(i);
}
```

ANOTHER EXAMPLE

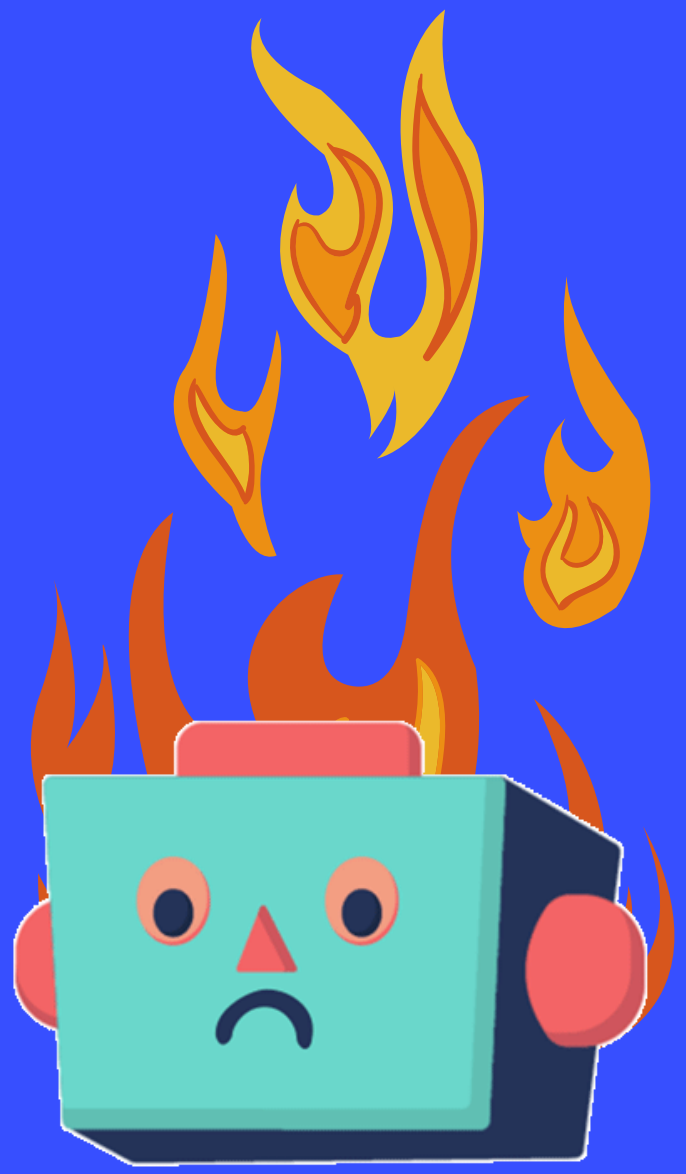
```
for (let i = 50; i >= 0; i -= 10) {
    console.log(i);
}
//50
//40
//30
//20
//10
//0
```

- Start *i* at 50
- Subtract 10 each iteration
- Keep going as long as i >= 0

INFINITE LOOPS

```
//DO NOT RUN THIS CODE!
for (let i = 20; i >= 0; i++) {
    console.log(i);
} //BADDDD!!!
```

BAD!



FOR LOOPS + ARRAYS

To loop over an array, start at 0 and continue to the last index (length-1)

```
const animals = [ 'lions', 'tigers', 'bears' ];

for (let i = 0; i < animals.length; i++) {
    console.log(i, animals[i]);
}
//0 'lions'
//1 'tigers'
//2 'bears'
```

NESTED LOOPS

```
let str = 'LOL';
for (let i = 0; i <= 4; i++) {
    console.log("Outer:", i);
    for (let j = 0; j < str.length; j++) {
        console.log('  Inner:', str[j]);
    }
}
```

```
Outer: 0
  Inner: L
  Inner: O
  Inner: L
Outer: 1
  Inner: L
  Inner: O
  Inner: L
Outer: 2
  Inner: L
  Inner: O
  Inner: L
Outer: 3
  Inner: L
  Inner: O
  Inner: L
Outer: 4
  Inner: L
  Inner: O
  Inner: L
```

WHILE LOOPS

A while loop continues to run as long as its test condition is true

```
let num = 0;
while (num < 10) {
    console.log(num);
    num++;
}
```

```
0
1
2
3
4
```

A COMMON PATTERN

```
let targetNum = Math.floor(Math.random() * 10);
let guess = Math.floor(Math.random() * 10);

while (guess !== targetNum) {
    console.log(`Guessed ${guess}...Incorrect!`);
    guess = Math.floor(Math.random() * 10);
}
console.log(`CORRECT! Guessed: ${guess} & target was: ${targetNum}`);
```

BREAK KEYWORD

```
let targetNum = Math.floor(Math.random() * 10);
let guess = Math.floor(Math.random() * 10);

while (true) {
    guess = Math.floor(Math.random() * 10);
    if (guess === targetNum) {
        console.log(`CORRECT! Guessed: ${guess} & target was: ${targetNum}`);
        break;
    }
    else {
        console.log(`Guessed ${guess}...Incorrect!`);
    }
}
```

FOR...OF

A nice and easy way of iterating over arrays

(or other iterable objects)

No Internet Explorer Support

FOR...OF

```
for (variable of iterable) {
  statement
}
```

FOR...OF

```
let subreddits = [ 'soccer', 'popheads', 'cringe', 'books' ];
for (let sub of subreddits) {
    //Do this for every item in subreddits array:
    console.log(`${sub} - www.reddit.com/r/${sub}`);
}
```

NESTED

```
const magicSquare = [
  [ 2, 7, 6 ],
  [ 9, 5, 1 ],
  [ 4, 3, 8 ]
];

for (let row of magicSquare) {
    let sum = 0;
    for (let num of row) {
        sum += num;
    }
    console.log(`Row of ${row} sums to ${sum}`);
}
```

```
Row of 2,7,6 sums to 15
Row of 9,5,1 sums to 15
Row of 4,3,8 sums to 15
```

OBJECTS!

We can loop over the keys of an object, using Object.keys()

```
const movieReviews = {
    Amadeus : 10,
    Arrival : 9.5,
    Alien   : 9,
    Amelie  : 8
};

for (let movie of Object.keys(movieReviews)) {
    let score = movieReviews[movie];
    console.log(`I rated ${movie} ${score}/10`);
}
```

```
I rated Amadeus 10/10
I rated Arrival 9.5/10
I rated Alien 9/10
I rated Amelie 8/10
```

"You should watch Amadeus if you haven't seen it yet!"

FOR...IN

Loop over the keys in an object

```
for (variable in object) {
  statement
}
```

FOR...IN EXAMPLE

```
const jeopardyWinnings = {
    regularPlay            : 2522700,
    watsonChallenge        : 300000,
    tournamentOfChampions  : 500000,
    battleOfTheDecades     : 100000
};

let total = 0;
for (let key in jeopardyWinnings) {
    total += jeopardyWinnings[key];
}
console.log(`Ken Jenning's Total Winnings: $${total}`);
//Ken Jenning's Total Winnings: $3422700
```